

Duerr, Darlene W.

From: Kristin Renshaw <KristinRenshaw@kennedyjenks.com>
Sent: Tuesday, May 11, 2021 11:29 AM
To: Duerr, Darlene W.; Cardno, Scott
Cc: Steve Frey; David Essex (MTM)
Subject: MTMUS Amendment #3 Revisions
Attachments: Process Flow Diagrams Rev3 (Revised 05112021).pdf; MTMUS Emissions Amendment #3 (Revised 05112021).pdf; MTMUS Permit Amendment #3 Final (Revised Pages 05112021).pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Good Morning,

As discussed with David during your recent call, attached are revised pages to MTMUS' Amendment #3 permit revision request.

The changes were made to reflect consistency throughout the application when discussing/describing the two new control devices, Unit 1500-103 Combined Clearcoat Booth Thermal Oxidizer (CCBOOTH-T0) and Unit 1500-104 Combined Topcoat Oven Thermal Oxidizer (TCOVEN-T0).

The revised pages should replace the pages submitted on 11/16/2020 in the initial version of the application.

Please let us know if you have any questions or comments.



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Permits 7-08-P391-Z003 and 7-08-P391-Z004 authorizes the construction and operation of the Toyota Line and Mazda Line Paint Shops. MTMUS is providing updated information related to the VOC control technologies for the Paint Shop - Emission Units 200-T1,T2,T4 and 200-M1, M2, M3. The proposed changes to the VOC control technology is summarized below:

- **Body E-Coat Dip Tank and Oven** - The initial plant design included two thermal oxidizer(s) (TO), one per line, to control VOC emissions from the E-coat baths and ovens for the Toyota and Mazda lines. Based on updated engineering, **only one TO will be installed to control the emissions from the Toyota and Mazda lines, to be identified as Unit 1500-101 Combined E-Coat Thermal Oxidizer (ECOAT-TO).**
- **Sealers & Misc. Body Coatings** - The initial plant design included two thermal oxidizer(s) (TO), one per line, to control VOC emissions from the Toyota and Mazda Sealer ovens. **Based on updated engineering, one TO will be installed to control the emissions from both sealer ovens, to be identified as Unit 1500-102 - Combined Sealer Oven Thermal Oxidizer (SEALER-TO).**
- **Topcoat System** - The initial plant design included two thermal oxidizer(s) (TO), one per line, to control VOC emissions from the Toyota and Mazda Topcoat booths. **Based on updated engineering, one TO will be installed to control VOC emissions from both clearcoat spray booths (Toyota and Mazda Lines), to be identified as Unit 1500-103 Combined Clearcoat Booth Thermal Oxidizer (CCBOOTH-TO).** The initial plant design also included two thermal oxidizer(s) (TO), one per line, to control VOC emissions from the Toyota and Mazda Topcoat ovens. **Based on updated engineering, one TO will be installed to control the emissions from the Toyota / Mazda Topcoat ovens, to be identified as Unit 1500-104 Combined Topcoat Oven Thermal Oxidizer (TCOVEN-TO).**

Change #2 - Changes to Natural Gas Combustion Devices Specifically Paint Shop Control Devices

Permit Number 7-08-P391-Z005 authorizes the operation of natural gas fired combustion devices. Based on engineering review, the number and type of control devices required to support the MTMUS Paint Shop has changed.

Change #3 – Changes to Emergency Equipment

Permit Number 7-08-P391-Z007 authorizes the operation of emergency generators and fire pump engines. Based on engineering review, the number and type of emergency generators and fire pumps required to support the MTMUS vehicle assembly plant has changed.

Proposed Control Devices

- Unit 1500-102 - Combined Sealer Oven Thermal Oxidizer (SEALER-TO) - 2.4 MMBtu/hr

The current BACT limit is an average of 0.3 lbs of VOC/gallon (excluding water. The proposed change will not result in a change in the BACT limit. Figures 2-3a through 2-3d depict the as-permitted and proposed Toyota and Mazda Sealer and Miscellaneous Body Coating systems.

2.1.1.3 Proposed Changes to the Control Device for the Topcoat System

The initial plant design included two thermal oxidizer(s) (TO), one per line, to control VOC emissions from the Toyota and Mazda Topcoat booths. *Based on updated engineering, one TO will be installed to control VOC emissions from both clearcoat spray booths (Toyota and Mazda Lines), to be identified as Unit 1500-103 Combined Clearcoat Booth Thermal Oxidizer (CCBOOTH-TO).*

The initial plant design also included two thermal oxidizer(s) (TO), one per line, to control VOC emissions from the Toyota and Mazda Topcoat ovens. *Based on updated engineering, one TO will be installed to control the emissions from the Toyota / Mazda Topcoat ovens, to be identified as Unit 1500-104 Combined Topcoat Oven Thermal Oxidizer (TCOVEN-TO).*

Permitted Control Devices

- Unit 1500-14 Toyota Line Paint Booth Thermal Oxidizer - 11 MMBtu/hr
- Unit 1500-16 Toyota Line Paint Oven Thermal Oxidizer - 3.9 MMBtu/hr
- Unit 1500-27 Mazda Line Paint Booth Thermal Oxidizer - 11 MMBtu/hr
- Unit 1500-29 Mazda Line Paint Oven Thermal Oxidizer - 3.9 MMBtu/hr

Proposed Control Devices

- Unit 1500-103 Combined Clearcoat Booth Thermal Oxidizer (CCBOOTH-TO) - 5.12 MMBtu/hr
- Unit 1500-104 Combined Topcoat Oven Thermal Oxidizer (TCOVEN-TO) – 4.6 MMBtu/hr

The current BACT limit is 4.8 lbs VOC per gallon of applied coating solids. The proposed change will not result in a change in the BACT limit. Figures 2-4a through 2-4d depict the as-permitted and proposed Toyota and Mazda Topcoat Paint Systems.

2.1.2 Potential to Emit a Regulated Air Pollutant

The E-Coat, Sealers & Misc. Body Coatings and Topcoat Paint Systems will have the potential to emit emissions of VOCs / HAPs and PM. The proposed changes to the VOC control devices will not affect or alter the estimated emissions of VOC or PM currently permitted for these paint line systems.

The natural gas-fired control devices will also have the potential to emit regulated air pollutants from the combustion of natural gas, the emissions associated with the combustion of natural gas are discussed in Section 2.2.

Please note that small changes to the material VOC content have been made however, the tons/year emission rates initially proposed by MTMUS will not increase based on the level of VOC control reflected in this application.

2.1.3 Air Pollutant Control Devices/Techniques

The Toyota and Mazda paint lines will each utilize the following controls:

- Body E-Coat Dip Tank and Oven - The initial plant design included two thermal oxidizer(s) (TO), one per line, to control VOC emissions from the E-Coat baths and ovens for the Toyota and Mazda lines. **Based on updated engineering, only one TO will be installed to control the emissions from the Toyota and Mazda lines, to be identified as Unit 1500-101 Combined E-Coat Thermal Oxidizer (ECOAT-TO).**
- Sealers & Misc. Body Coatings - The initial plant design included two thermal oxidizer(s) (TO), one per line, to control VOC emissions from the Toyota and Mazda Sealer ovens. **Based on updated engineering, one TO will be installed to control the emissions from both sealer ovens, to be identified as Unit 1500-102 - Combined Sealer Oven Thermal Oxidizer (SEALER-TO).**
- Topcoat System - The initial plant design included two thermal oxidizer(s) (TO), one per line, to control VOC emissions from the Toyota and Mazda Topcoat booths. **Based on updated engineering, one TO will be installed to control VOC emissions from both clearcoat spray booths (Toyota and Mazda Lines), to be identified as Unit 1500-103 Combined Clearcoat Booth Thermal Oxidizer (CCBOOTH-TO).** The initial plant design also included two thermal oxidizer(s) (TO), one per line, to control VOC emissions from the Toyota and Mazda Topcoat ovens. **Based on updated engineering, one TO will be installed to control the emissions from the Toyota / Mazda Topcoat ovens, to be identified as Unit 1500-104 Combined Topcoat Oven Thermal Oxidizer (TCOVEN-TO).**

2.2 Change #2 – Changes to Natural Gas Combustion Devices Specifically Paint Shop Control Devices

Included in this section is a discussion on the proposed change, the resultant change in emissions of regulated air pollutants and other relevant information pertaining to the proposed change.

2.2.1 Description of Proposed Change

Permit Number 7-08-P391-Z005 authorizes the operation of natural gas fired combustion devices. Based on engineering review, the number and type of control devices required to support the MTMUS Paint Shop has changed.

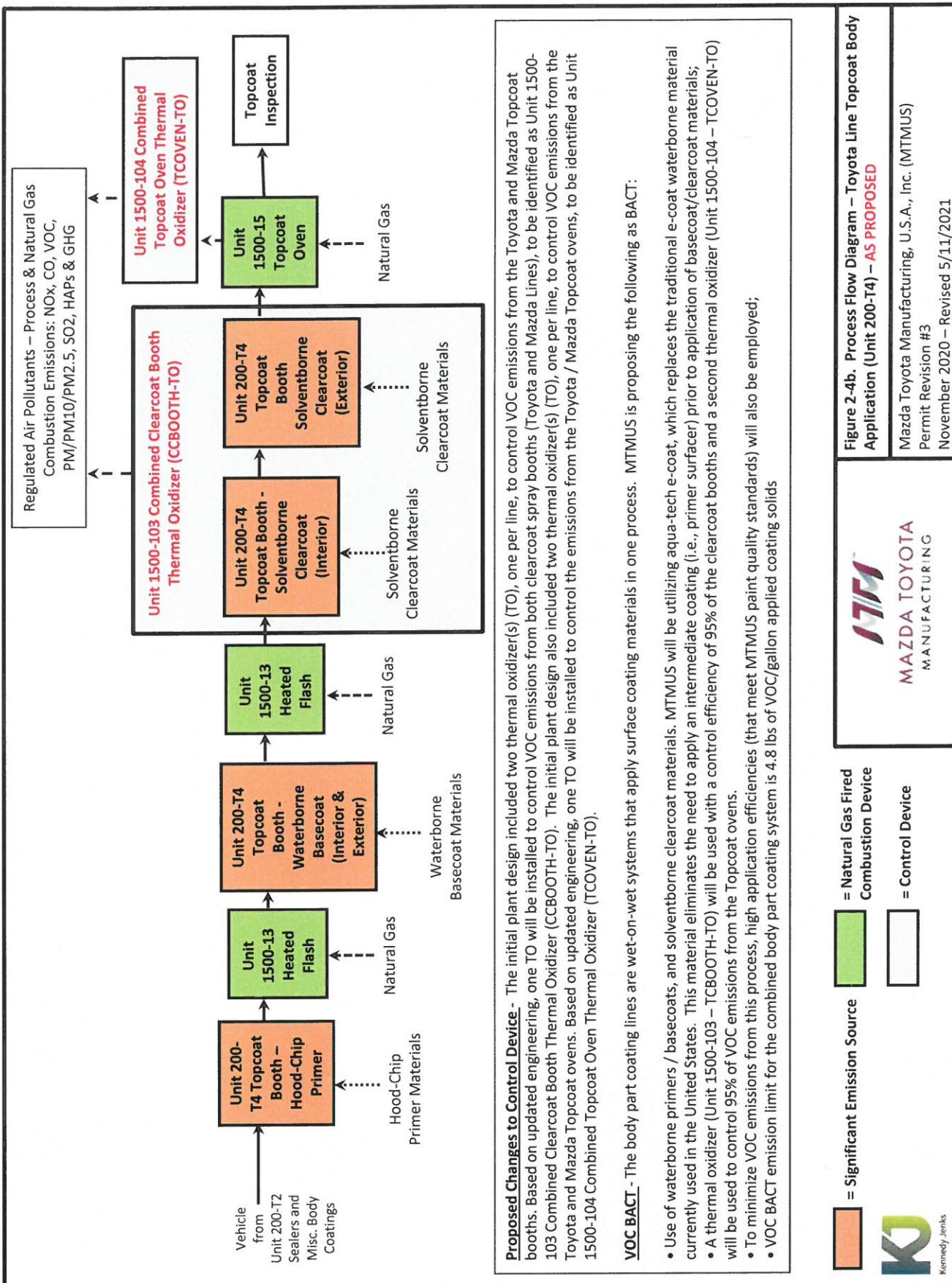
Permitted Control Devices

- Unit 1500-10 Toyota Line ED Oven Thermal Oxidizer (TO-T1) - 2.3 MMBtu/hr
- Unit 1500-23 Mazda Line ED Oven Thermal Oxidizer (TO-M1) - 2.3 MMBtu/hr
- Unit 1500-35 Toyota Line Sealer Oven Thermal Oxidizer (TO-T4) - 1.2 MMBtu/hr
- Unit 1500-36 Mazda Line Sealer Oven Thermal Oxidizer (TO-M4) - 1.2 MMBtu/hr
- Unit 1500-14 Toyota Line Paint Booth Thermal Oxidizer - 11 MMBtu/hr
- Unit 1500-16 Toyota Line Paint Oven Thermal Oxidizer - 3.9 MMBtu/hr
- Unit 1500-27 Mazda Line Paint Booth Thermal Oxidizer - 11 MMBtu/hr
- Unit 1500-29 Mazda Line Paint Oven Thermal Oxidizer - 3.9 MMBtu/hr

Proposed Control Devices

- Unit 1500-101 Combined E-Coat Thermal Oxidizer (ECOAT-TO) - 4.6 MMBtu/hr
- Unit 1500-102 Combined Sealer Oven Thermal Oxidizer (SEALER-TO) - 2.4 MMBtu/hr
- Unit 1500-103 Combined Clearcoat Booth Thermal Oxidizer (CCBOOTH-TO) - 5.12 MMBtu/hr
- Unit 1500-104 Combined Topcoat Oven Thermal Oxidizer (TCOVEN-TO) – 4.6 MMBtu/hr.

As discussed in Air Permit(s) Revision Request #2, MTMUS has also been going through a selection process to select the vendor that will be supplying natural gas fired combustion devices



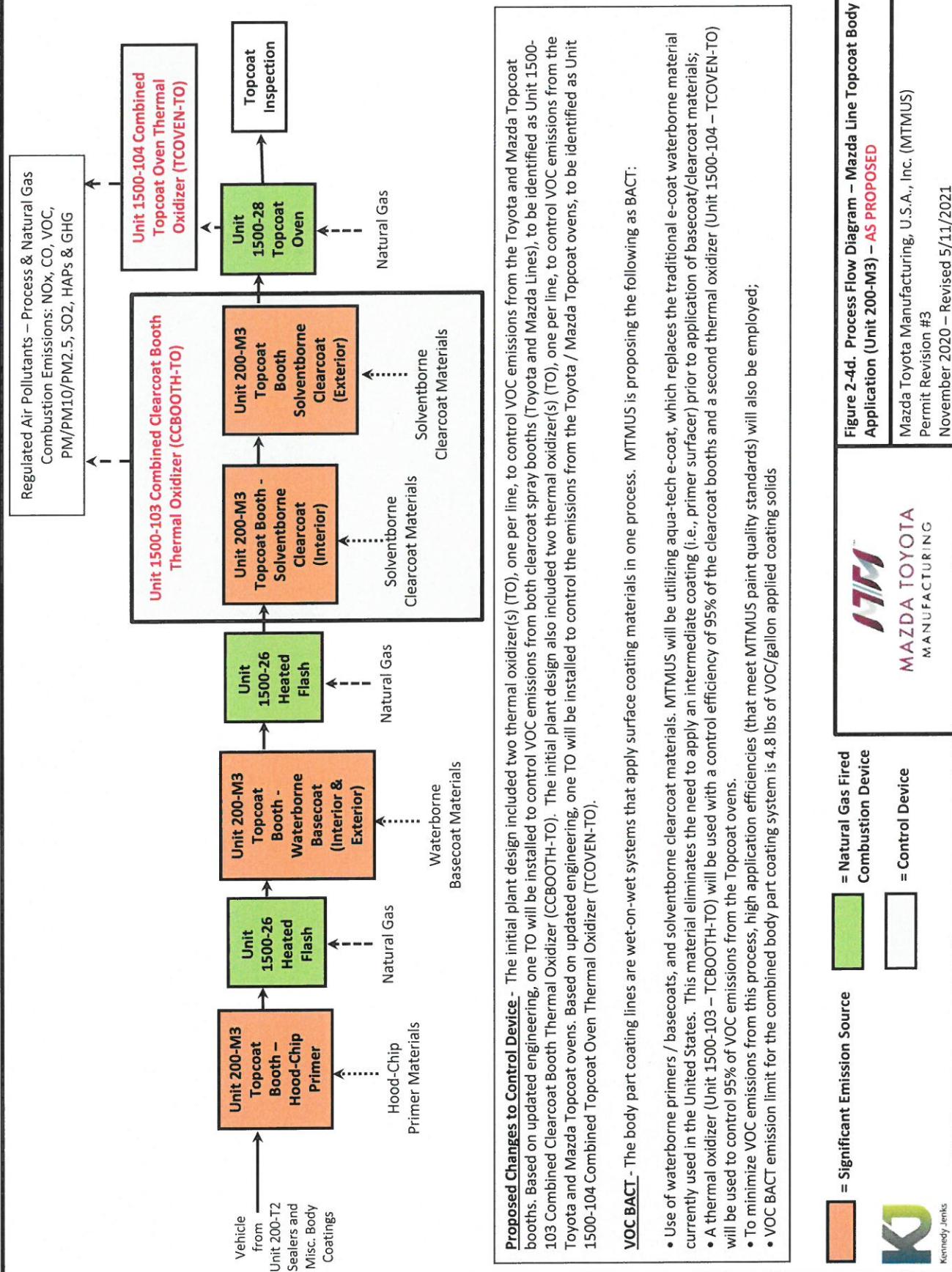


Table 2-1c
Mazda Toyota Manufacturing, U.S.A., Inc. (MTMUS)
 Air Permit Revision Request #3
 List of Proposed Changes

Change #1 – Updates to the VOC Control Technology to be Used for Paint Shop Processes	
Permits 7-08-P391-2003 and 7-08-P391-2004 authorizes the construction and operation of the Toyota Line and Mazda Line Paint Shops. Permit Number 7-08-P391-2005 authorizes the operation of Miscellaneous Natural Gas Fired Combustion Sources (Unit 1500). Based on ongoing engineering reviews, the MTMUS is providing updated information related to the VOC control technologies for the Paint Shop:	
Body E-Coat Dip Tank and Curing Oven	The initial plant design included two thermal oxidizer(s) (TO), one per line, to control VOC emissions from the E-coat baths and ovens for the Toyota and Mazda lines. Based on updated engineering, only one TO will be installed to control the emissions from the Toyota and Mazda lines, to be identified as Unit 1500-101 Combined E-Coat Thermal Oxidizer (ECOAT-TO).
Permitted Control Devices	
- Unit 1500-10 Toyota Line ED Oven Thermal Oxidizer (TO-T1) - 2.3 MMBtu/hr	
- Unit 1500-23 Mazda Line ED Oven Thermal Oxidizer (TO-M1) - 2.3 MMBtu/hr	
Proposed Control Devices	
- Unit 1500-101 Combined E-Coat Thermal Oxidizer (ECOAT-TO) - 4.6 MMBtu/hr	
Permits 7-08-P391-2003 and 7-08-P391-2004 authorizes the construction and operation of the Toyota Line and Mazda Line Paint Shops. Permit Number 7-08-P391-2005 authorizes the operation of Miscellaneous Natural Gas Fired Combustion Sources (Unit 1500). Based on ongoing engineering reviews, the MTMUS is providing updated information related to the VOC control technologies for the Paint Shop:	
Sealer Oven Thermal Oxidizer	The initial plant design included two thermal oxidizer(s) (TO), one per line, to control VOC emissions from the Toyota and Mazda Sealer ovens. Based on updated engineering, one TO will be installed to control the emissions from both sealer ovens, to be identified as Unit 1500-102 - Combined Sealer Oven Thermal Oxidizer (SEALER-TO).
Permitted Control Devices	
- Unit 1500-35 Toyota Line Sealer Oven Thermal Oxidizer (TO-T4) - 1.2 MMBtu/hr	
- Unit 1500-36 Mazda Line Sealer Oven Thermal Oxidizer (TO-M4) - 1.2 MMBtu/hr	
Proposed Control Devices	
- Unit 1500-102 - Combined Sealer Oven Thermal Oxidizer (SEALER-TO) - 2.4 MMBtu/hr	
Permits 7-08-P391-2003 and 7-08-P391-2004 authorizes the construction and operation of the Toyota Line and Mazda Line Paint Shops. Permit Number 7-08-P391-2005 authorizes the operation of Miscellaneous Natural Gas Fired Combustion Sources (Unit 1500). Based on ongoing engineering reviews, the MTMUS is providing updated information related to the VOC control technologies for the Paint Shop:	
Topcoat Thermal Oxidizer	The initial plant design included two thermal oxidizer(s) (TO), one per line, to control VOC emissions from the Toyota and Mazda Topcoat booths. Based on updated engineering, one TO will be installed to control VOC emissions from both clearcoat spray booths (Toyota and Mazda Lines), to be identified as Unit 1500-103 Combined Clearcoat Booth Thermal Oxidizer (CCBOOTH-TO).
- The initial plant design also included two thermal oxidizer(s) (TO), one per line, to control VOC emissions from the Toyota and Mazda Topcoat ovens. Based on updated engineering, one TO will be installed to control the emissions from the Toyota / Mazda Topcoat ovens, to be identified as Unit 1500-104 Combined Topcoat Oven Thermal Oxidizer (TCOVEN-TO).	
Permitted Control Devices	
- Unit 1500-14 Toyota Line Paint Booth Thermal Oxidizer - 11 MMBtu/hr	
- Unit 1500-16 Toyota Line Paint Oven Thermal Oxidizer - 3.9 MMBtu/hr	
- Unit 1500-27 Mazda Line Paint Booth Thermal Oxidizer - 11 MMBtu/hr	
- Unit 1500-29 Mazda Line Paint Oven Thermal Oxidizer - 3.9 MMBtu/hr	
Proposed Control Devices	
- Unit 1500-103 Combined Clearcoat Booth Thermal Oxidizer (CCBOOTH-TO) - 5.12 MMBtu/hr	
- Unit 1500-104 Combined Topcoat Oven Thermal Oxidizer (TCOVEN-TO) - 4.6 MMBtu/hr	

Table 2-1c
Mazda Toyota Manufacturing U.S.A., Inc. (MTMUS)
Air Permit Revision Request #3
List of Proposed Changes

Change #2 - Changes to Natural Gas Combustion Devices specifically Paint Shop Control Devices	
Permit Number 7-08-P391-2005 authorizes the operation of natural gas fired combustion devices. Based on engineering review, the number and type of control devices required to support the MTMUS Paint Shop has changed. MTMUS is also proposing to change the NOx emission rate from 0.05 lbs/MMBtu to 0.06 lbs/MMBtu.	
Permitted Control Devices	
<ul style="list-style-type: none"> - Unit 1500-10 Toyota Line ED Oven Thermal Oxidizer (TO-T1) - 2.3 MMBtu/hr - Unit 1500-23 Mazda Line ED Oven Thermal Oxidizer (TO-M1) - 2.3 MMBtu/hr - Unit 1500-14 Toyota Line Paint Booth Thermal Oxidizer - 11 MMBtu/hr - Unit 1500-16 Toyota Line Paint Oven Thermal Oxidizer - 3.9 MMBtu/hr - Unit 1500-27 Mazda Line Paint Booth Thermal Oxidizer - 11 MMBtu/hr - Unit 1500-29 Mazda Line Paint Oven Thermal Oxidizer - 3.9 MMBtu/hr - Unit 1500-35 Toyota Line Sealer Oven Thermal Oxidizer (TO-T4) - 1.2 MMBtu/hr - Unit 1500-36 Mazda Line Sealer Oven Thermal Oxidizer (TO-M4) - 1.2 MMBtu/hr 	
Proposed Control Devices	
<ul style="list-style-type: none"> - Unit 1500-101 Combined E-Coat Thermal Oxidizer (ECOAT-TO) - 4.6 MMBtu/hr - Unit 1500-102 - Combined Sealer Oven Thermal Oxidizer (SEALER-TO) - 2.4 MMBtu/hr - Unit 1500-103 Combined Clearcoat Booth Thermal Oxidizer (CCBOOTH-TO) - 5.12 MMBtu/hr - Unit 1500-104 Combined Topcoat Oven Thermal Oxidizer (TCOVEN-TO) - 4.6 MMBtu/hr 	
Change #3 - Changes to Diesel Fired Emergency Equipment	
Permit Number 7-08-P391-2007 authorizes the operation of emergency generators and fire pump engines. Based on engineering review, the number and type of emergency generators and fire pumps required to support the MTMUS vehicle assembly plant has changed:	
Emergency Generators	
<p>Permitted: Unit 1700-3c One (1) 350 kW (469 HP) Natural Gas Fired Emergency Generator - WWTP Revised: Unit 1700-1c: One (1) 671 kW (900 HP) Diesel Fired Emergency Generator - Wastewater Treatment Plant</p>	
Emergency Fire Water Pump	
<p>Permitted: Unit 1700-2: One (1) 120 kW (161 HP) Diesel Fired Emergency Fire Water Pump. Revised: Unit 1700-2: Two (2) 120 kW (161 HP) Diesel Fired Emergency Fire Water Pumps.</p>	

Table 2-4a

Mazda Toyota Manufacturing, U.S.A., Inc. (MTMUS)
 Air Permit Revision Request #3
 Potential Emissions of Regulated Air Pollutants from Toyota Topcoat Operations (Unit 200-T4) - VOC
 Comparison of Permitted to Proposed Emissions

Unit 200-T4 - Toyota Line Topcoat Booth							
Material Description	VOC (lbs/gal)	Contribution by Zone	Usage Rate (gal/unit)	Uncontrolled VOC (lbs/hr)	Controlled VOC (lbs/hr)	Uncontrolled VOC (tons/yr)	Controlled VOC (tons/yr)
Permitted Emissions [Exhausted to Unit 1500-T4 Toyota Line Paint Booth Thermal Oxidizer & Unit 1500-T6 Toyota Line Paint Booth Thermal Oxidizer]							
Hood-Chip Primer / Oven	5.99	100%	0.01	4.32	1.70	7.71	3.04
Basecoat Exterior / Preheat / Oven	1.25	100%	0.38	33.25	13.11	59.38	23.41
Basecoat Interior / Preheat / Oven	1.25	100%	0.33	28.88	11.39	51.56	20.33
Clearcoat Exterior / Oven	4.30	100%	0.36	107.19	42.26	191.41	75.47
Clearcoat Interior / Oven	4.30	100%	0.22	66.22	26.11	118.25	46.63
Permitted Emissions - Total Topcoat				259.9	94.6	428.3	168.9
Proposed Emissions [Exhausted to Unit 1500-T03 Combined Clearcoat Booth Thermal Oxidizer (CCBOOTH-T0) & Unit 1500-T04 Combined Topcoat Oven Thermal Oxidizer (TCOVEN-T0)]							
Hood-Chip Primer / Booth	6.10	90%	0.01	5.34	5.34	9.53	7.0
Hood-Chip Primer / Oven	6.10	10%	0.01	0.59	0.03	1.06	0.05
Basecoat Exterior Booth / Preheat	1.76	90%	0.38	42.13	42.13	75.24	70
Basecoat Exterior Oven	1.76	10%	0.38	4.68	0.23	8.36	0.42
Basecoat Interior Booth / Preheat	1.76	90%	0.33	36.59	36.59	65.34	70
Basecoat Interior Oven	1.76	10%	0.33	4.07	0.20	7.26	0.36
Clearcoat Exterior Booth	4.96	80%	0.36	99.57	5.00	178.52	8.93
Clearcoat Oven	4.96	20%	0.36	24.99	1.25	44.63	2.23
Clearcoat Interior Booth	4.96	80%	0.22	61.09	3.05	109.09	5.45
Clearcoat Oven	4.96	20%	0.22	15.27	0.76	27.27	1.36
Proposed Emissions - Total Topcoat				294.7	94.6	526.3	168.9

Control Efficiency	Permitted Efficiency	Proposed Efficiency
Control Efficiency of Wet on Wet Topcoat =	61%	--
Control Efficiency - Unit 1500-T03 Combined Clearcoat Booth Thermal Oxidizer (CCBOOTH-T0) =	--	95%
Control Efficiency - Unit 1500-T04 Combined Topcoat Oven Thermal Oxidizer (TCOVEN-T0) =	--	95%

Notes:

1. Toyota/Mazda are proposing the use of aqua-tech E-coat, which replaces the traditional e-coat waterborne material currently used in the United States. This material eliminates the need to apply an intermediate coating (i.e., primer surfacer) prior to application of basecoat/clearcoat materials.

2. Proposed Control Efficiency - A carbon concentrator will be used with capture efficiency of 85% of the clearcoat zones and then 95% VOC destruction of the 85% captured VOC emissions. Overall VOC control will be 85% for the clearcoat booth. The curing oven VOC emissions will go to the thermal oxidizer directly and will be reduced by 95%.

3. Proposed Control Efficiency - Estimate of carryover to the oven of 20% with a destruction efficiency of 95% of the thermal oxidizer

Calculation Method:

$$\text{Uncontrolled lbs/hr} = \text{lbs VOC/gallon} \times \text{gallons/unit} \times \text{units/hr}$$

$$\text{Controlled lbs/hr} = \text{Uncontrolled lbs/hr} \times \text{Overall Control Efficiency}$$

$$\text{Uncontrolled tons/yr} = \text{lbs VOC/gallon} \times \text{gallons/unit} \times \text{units/yr} / 2000$$

$$\text{Controlled tons/yr} = \text{Uncontrolled Tons/yr} \times \text{Total Overall Control Efficiency}$$

If emissions are not controlled, then controlled emissions = uncontrolled emissions.

Table 2-4b
 Mazda Toyota Manufacturing, U.S.A., Inc. (MTMUS)
 Air Permit Revision Request #3
 Potential Emissions of Regulated Air Pollutants from Mazda Topcoat Operation (Unit 200-M3) - VOC
 Comparison of Permitted to Proposed Emissions

Material Description	VOC (lbs/gal)	Contribution by Zone	Usage Rate (gal/unit)	Uncontrolled VOC (lbs/hr)	Controlled VOC (lbs/hr)	Uncontrolled VOC (tons/yr)	Controlled VOC (tons/hr)	Units Per Hour	Units Per Year
Permitted Emissions - Unit 200-M3 - Mazda Line Topcoat Booth (Exhausted to Unit 1500-27 Mazda Line Paint Booth Thermal Oxidizer & Unit 1500-29 Mazda Line Paint Oven Thermal Oxidizer)									
Hood-Chip Primer / Oven	5.99	100%	0.01	4.32	1.70	7.71	3.04	70	250,000
Basecoat Exterior / Preheat / Oven	1.25	100%	0.38	33.25	13.11	59.38	23.41	70	250,000
Basecoat Interior / Preheat / Oven	1.25	100%	0.33	28.88	11.39	51.56	20.33	70	250,000
Clearcoat Exterior / Oven	4.30	100%	0.36	107.19	42.26	191.41	75.47	70	250,000
Clearcoat Interior / Oven	4.30	100%	0.22	66.22	26.11	118.25	46.63	70	250,000
Permitted Emissions - Total Topcoat			239.9	94.6	428.3	168.9	—	—	—
Proposed Emissions (Exhausted to Unit 1500-103 Combined Clearcoat Booth Thermal Oxidizer (CCBOTH-TO) & Unit 1500-104 Combined Topcoat Oven Thermal Oxidizer (TCOVEN-TO))									
Hood-Chip Primer Booth	6.10	90%	0.01	5.34	5.34	9.53	9.53	70	250,000
Hood-Chip Primer to Oven	6.10	10%	0.01	0.59	0.03	1.06	0.05	70	250,000
Basecoat Exterior Booth / Preheat	1.76	90%	0.38	42.13	42.13	75.24	75.24	70	250,000
Basecoat Exterior Oven	1.76	10%	0.38	4.68	0.23	8.36	0.42	70	250,000
Basecoat Interior Booth / Preheat	1.76	90%	0.33	36.59	36.59	65.34	65.34	70	250,000
Basecoat Interior Oven	1.76	10%	0.33	4.07	0.20	7.26	0.36	70	250,000
Clearcoat Exterior Booth	4.96	80%	0.36	99.97	5.00	178.52	8.93	70	250,000
Clearcoat Oven	4.96	20%	0.36	24.99	1.25	44.63	2.23	70	250,000
Clearcoat Interior Booth	4.96	80%	0.22	61.09	3.05	109.09	5.45	70	250,000
Clearcoat Oven	4.96	20%	0.22	15.27	0.76	27.27	1.36	70	250,000
Proposed Emissions - Total Topcoat			294.7	94.6	526.3	168.9	—	—	—

Control Efficiency	Permitted Efficiency	Proposed Efficiency
Control Efficiency of Wet on Wet Topcoat =	61%	—
Control Efficiency - Unit 1500-103 Combined Clearcoat Booth Thermal Oxidizer (CCBOTH-TO) =	—	95%
Control Efficiency - Unit 1500-104 Combined Topcoat Oven Thermal Oxidizer (TCOVEN-TO) =	—	95%

Notes:

1. Toyota/Mazda are proposing the use of aqua-tech e-coat, which replaces the traditional e-coat/waterborne material currently used in the United States. This material eliminates the need to apply an intermediate coating (i.e., primer surfacer) prior to application of basecoat/clearcoat materials.
2. Proposed Control Efficiency - A carbon concentrator will be used with a capture efficiency of 85% of the clearcoat zones and then 95% VOC destruction of the 85% captured VOC emissions. Overall VOC control will be 81% for the clearcoat booth. The curing oven VOC emissions will go to the thermal oxidizer directly and will be reduced by 95%.
3. Proposed Control Efficiency - Estimate of carryover to the oven of 20% with a destruction efficiency of 95% of the thermal oxidizer

Calculation Method:
 Uncontrolled lbs/hr = lbs VOC/gallon x gallons/unit x units/hr

Table 2-5a
 Mazda Toyota Manufacturing, U.S.A., Inc. (MTMUS)
 Air Permit Revision Request #3
 Comparison of Heat Inputs & NOx Rates - MTMUS Control Devices
 Unit 1500 - Natural Gas Combustion Equipment

Revised Permit Revision #3						
Emission Point ID	Emission Point Description	Permitted		Emission Point Description		Sources to be Controlled
		Heat Input (MMBtu/hr)	NOx Rate lb/MMcf	Heat Input & NOx Rate lb/MMBtu		Heat Input (MMBtu/hr)
1500-10	Toyota Line ED Oven Thermal Oxidizer	2.3	60.0	0.06	Revision #2	Unit 1500-101 Combined E-Coat Thermal Oxidizer (ECOAT-TO)
1500-23	Mazda Line ED Oven Thermal Oxidizer	2.3	60.0	0.06		Toyota and Mazda ED Ovens
1500-14	Toyota Line Paint Booth Thermal Oxidizer	11.0	51.0	0.05	Initial Permit	Unit 1500-103 Combined Clearcoat Booth Thermal Oxidizer (CCBOOTH-TO)
1500-27	Mazda Line Paint Booth Thermal Oxidizer	11.0	51.0	0.05		Toyota and Mazda Clearcoat Booths
1500-16	Toyota Line Paint Open Thermal Oxidizer	3.9	51.0	0.05	Initial Permit	Unit 1500-104 Combined Topcoat Oven Thermal Oxidizer (TCOVEN-TO)
1500-29	Mazda Line Paint Open Thermal Oxidizer	3.9	51.0	0.05		Toyota and Mazda Topcoat Ovens
1500-35	Toyota Line Sealer Oven Thermal Oxidizer	1.2	60.0	0.06	Revision #2	Unit 1500-102 Combined Sealer Thermal Oxidizer (SEALER-TO)
1500-36	Mazda Line Sealer Oven Thermal Oxidizer	1.2	60.0	0.06		Toyota and Mazda Sealer Ovens